

REMARKS

Reconsideration of this application is respectfully requested in view of the foregoing amendment and following remarks.

By the foregoing amendment, claims 3 and 10 have been canceled, and the subject matter thereof has been incorporated into claims 1 and 8, respectively. Claim 2 was previously canceled. Thus, claims 1, 4-9 and 11-17 are currently pending in the application and subject to examination. No new matter has been added by the amendment.

Submitted herewith is a Declaration under 37 C.F.R. § 1.132, executed by the first named inventor of the instant application. The Applicants respectfully request entry and consideration of the remarks and Declaration.

In the Final Office Action mailed August 10, 2006, the Examiner rejected claims 1, 3-5, 8-12 and 15-17 under 35 U.S.C. § 103(a) as being unpatentable over Applicants' Admitted Prior Art (hereinafter "AAPA") in view of Miwada (U.S. Patent No. 5,220,210), in view of Hatta (U.S. Patent No. 5,087,964), in view of Masuda et al. (U.S. Patent No. 5,249,055, hereinafter "Masuda"), in view of Ishii et al. (U.S. Patent No. 6,022,792, hereinafter "Ishii"), in view of Examiner's Official Notice; claims 6 and 13 under 35 U.S.C. § 103(a) as being unpatentable over the AAPA, in view of Miwada, in view of Hatta, in view of Masuda, in view of Ishii, in view of the Examiner's Official Notice, in further view of Kawai et al. (U.S. Patent No. 6,078,685, hereinafter "Kawai"), in further view of Phillips et al. (U.S. Patent No. 5,773,814, hereinafter "Phillips"); and claims 7 and 14 under 35 U.S.C. § 103(a) as being unpatentable over the AAPA, in view of Miwada, Hatta, Masuda, Ishii, Examiner's Official Notice, Kawai and Phillips, and further

in view of Sakamoto et al. (U.S. Patent No. 5,648,653, hereinafter "Sakamoto"). It is noted that claims 3 and 10 have been canceled and claims 1 and 8 have been amended. To the extent that the rejections remain applicable to the claims currently pending, the Applicants hereby traverse the rejections, as follows.

In claims 1 and 8, as amended, at least one photodiode group composed of a plurality of photodiodes is formed only in a central area of a surface of an elongated semiconductor substrate along a longitudinal direction of the semiconductor substrate. A peripheral circuit section is formed in a peripheral area of the surface of the semiconductor substrate external to the central area in the longitudinal direction of the semiconductor substrate. A plurality of bonding pads is formed on the surface of the semiconductor substrate externally, in the longitudinal direction, to the central area of the surface of the semiconductor substrate. In addition, each of the bonding pads is disposed external to the peripheral circuit section with respect to the longitudinal direction of the semiconductor substrate.

Thus, in amended claims 1 and 8, the photodiodes are formed only in the central portion of the semiconductor substrate having the elongated shape, the peripheral circuit section is formed external to the central area in the longitudinal direction of the substrate and the bonding pads are formed external to the peripheral circuit section in the longitudinal direction of the substrate. Thus, the bonding pads are formed outside (in the longitudinal direction) both the central area and the peripheral circuit sections in the claimed invention. Therefore, it is possible to prevent light that enters through a package window and is reflected at the surface of the bonding pads from entering the

photodiodes. In addition, photo-sensors can be disposed widely along the lateral direction, thereby reducing noise without decreasing the sensitivity.

As set forth in the attached Declaration, the present application, at page 3, misinterprets the description of certain prior art described in Japanese Patent Application 2000-194500 filed on June 28, 2000, from which the instant application derives priority and upon which it is based. The section in the corresponding Japanese application, upon which the instant application is based, reflects that the LIS semiconductor chip (the semiconductor substrate) has at least part of the bonding pads located at the same longitudinal positions as the image pickup section or the peripheral circuit section. Accordingly, the AAPA as properly interpreted neither discloses nor suggests that the bonding pads are formed external to the peripheral circuit sections in the longitudinal direction of the substrate, the peripheral circuit section being formed external to the central area of the substrate in the longitudinal direction of the substrate.

The Applicants submit that none of the cited prior art, nor combination thereof, discloses or suggests at least the combination of an image pickup section formed on said semiconductor substrate, said image pickup section including (i) at least one photodiode group composed of a plurality of photodiodes formed only in a central area of a surface of said semiconductor substrate along a longitudinal direction of said semiconductor substrate and (ii) a charge transfer element provided for each said photodiode group; a peripheral circuit section formed in a peripheral area of said surface of said semiconductor substrate, said peripheral area being external to said central area in the longitudinal direction of the semiconductor substrate; a plurality of bonding pads formed on the surface of said semiconductor substrate externally, in the

longitudinal direction, to the central area of the surface of the semiconductor substrate, each of said bonding pads having an exposed central surface area, wherein each of said bonding pads is disposed outer than said peripheral circuit section with respect to the longitudinal direction of said semiconductor substrate, as recited in claim 1, as amended.

For at least this reason, the Applicants submit that claim 1, as amended, is allowable over the applied art of record. As claim 1 is allowable over the cited prior art, the Applicants submit that claims 4-7 and 17, which depend from allowable claim 1, are likewise allowable over the applied art of record.

Similarly to as discussed above with regard to claim 1, the Applicant submits that claim 8 is allowable over the cited prior art at least because none of the cited prior art, nor combination thereof, discloses or suggests at least the combination of an image pickup section formed on said semiconductor substrate, said image pickup section including (i) at least one photodiode group composed of a plurality of photodiodes formed only in a central area of a surface of said semiconductor substrate along a longitudinal direction of said semiconductor substrate and (ii) a charge transfer element provided for each said photodiode group, (3) a peripheral circuit section formed in a peripheral area of said surface of the semiconductor substrate, said peripheral area being external to said central area in the longitudinal direction of said semiconductor substrate, (4) a plurality of bonding pads formed on the surface of said semiconductor substrate externally, in the longitudinal direction, to the central area of the surface of the semiconductor substrate, each of said bonding pads having an exposed central surface area, wherein each of said bonding pads is disposed outer than said peripheral circuit

section with respect to the longitudinal direction of said semiconductor substrate, as recited in claim 8, as amended.

As claim 8 is allowable over the applied art of record, the Applicants submit that claims 9 and 11-17, which depend from allowable claim 8, are likewise allowable over the applied art of record.

CONCLUSION


For all of the above reasons, it is respectfully submitted that claims 1, 4-9 and 11-17 are in condition for allowance and a Notice of Allowability is earnestly solicited.

Should the Examiner determine that any further action is necessary to place this application into better form, the Examiner is invited to contact the undersigned representative at the telephone number listed below.

In the event this paper is not considered to be timely filed, the Applicants hereby petition for an appropriate extension of time. The Commissioner is hereby authorized to charge any fee deficiency or credit any overpayment associated with this

communication to Deposit Account No. 01-2300, referencing docket number 107317-00032.

Respectfully submitted,
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WLC/MLC

Enclosures: Declaration Under 37 C.F.R. § 1.132